c) From eq. 2.30 and 2.31 in the textbook

$$p' \sin\theta = p_e \sin\phi \quad \text{— (1)}$$

and $$p - p' \cos\theta = p_e \cos\phi \quad \text{— (2)}$$

$$\frac{(1)}{(2)} \Rightarrow \tan\phi = \frac{p' \sin\theta}{p - p'\cos\theta} = \frac{\frac{h \sin\theta}{\lambda'}}{\frac{h}{\lambda} - \frac{h}{\lambda'}\cos\theta}$$

$$= \frac{\frac{\sin\theta}{\lambda'}}{\frac{1}{\lambda} - \frac{\cos\theta}{\lambda'}} = \frac{\frac{\sin\theta}{\lambda'}}{\frac{\lambda' - \lambda\cos\theta}{\lambda\lambda'}}$$

$$= \frac{\lambda \sin\theta}{\lambda' - \lambda\cos\theta}$$

$$\phi = \tan^{-1}\left(\frac{0.118 \sin 122.6^\circ}{0.155 - 0.118 \cos 122.6^\circ}\right)$$

$$= \tan^{-1}\left(\frac{0.0994}{0.2186}\right) = \tan^{-1}(0.455)$$

$$\boxed{\phi = 24.5^\circ}$$